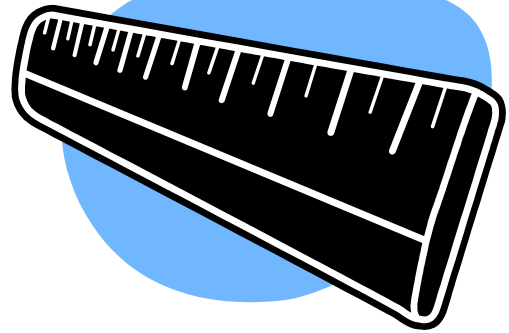


Amazing Area

Launch:

Have the learners work in pairs. Give each pair a few of the same sized plate. Decide on objects which you would like to find the area of, such as a table, desk, the floor, a rectangular or square rug, or the cover of a book. Ask the learners to think about the following questions:

1. Compare the different measuring tools. What relationships do you notice between the tools?
2. If you use different sized plates to measure the surface of the table, will you use more big or small plates to cover the table? Why?
3. About how many more of the different sized plates do you think you will need?
4. If you do not have enough plates to cover the surface of your object, how can you still determine how many plates you will need to cover the object?



Materials:

- 4.75 inch plastic plates
- 8 inch plastic plates
- 10.75 inch plastic plates
- 6 3/8 inch paper plates
- 9.5 inch paper plates
- Foam square inches
- 8 rulers
- 8 metric measuring tapes
- Amazing Area sheet

Activity:

1. With your measuring tool (the amazing area plate), determine what will be your unit of measure.
2. Use your amazing area plates to measure the surface of the table.
As learners measure, make sure the plates are lined up so they don't overlap and there are no gaps.
3. Count and write down the number of amazing area plates you used in the appropriate column of the table.
4. What is the area? (How many plates did it take to cover the entire table?)
5. Find a pair that was using a different size plate and trade plates.
6. What is your unit of measure?
7. Use your new amazing area plates to cover the table.
8. Count and write down the number of amazing area plates you used in the appropriate column of the table.
9. What is the area of the table?
10. Compare the two different measurements of area with the pair you traded plates with.
11. Are your areas the same or different? Why might they be different?
Help the learners find something else to measure, maybe the cover of a book or a section of the room.
12. Do you think it will take more or less plates to cover the new object?
13. Repeat 1-11 for your new object.

Sharing the Area:

Discuss the following with the learners, with the intent that they will recognize the need for a standardized unit.

1. If you wanted to talk about how much fabric you need to make a table cloth, how much carpet you need to cover the floor, or how much paper you need to cover your book, would it be convenient to share the numbers of plates you use? Why or why not?
2. What ideas do you have for a measurement of area that you could use that other people would be more likely to have available?
3. What measuring tools have you used to find the length of something?
4. How might these tools be helpful in finding area?
5. Find the container full of square inches. How do these compare with measuring tools you have used for measuring length?
6. How could you make a square foot from the square inches?
7. Use the square inches to cover one of the plates. How many did you use?
8. Use a ruler to measure a side length of one plate. How could you use this length measurement to find out how many square inches would cover the plate?
9. How could you use the area measurement of the plate to find the area of the table you measured?
10. Use a ruler or measuring tape to measure the length and width of the table you measured in inches. How could you use these measurements to find the area of the table?
11. Find the area of the table using both the area of the plate and length measurements from 10. How do these compare?
12. Are these measurements the same? If not, what might be the cause of the differences?

Extensions:

Measure more: Ask learners to choose different objects to measure. Compare the lengths they are finding with the lengths they have already measured. IF the numbers are the same but the tools are different, ask students why it takes, for example, six small plates to cover a cook and six large plates to cover a table. Why are the numbers the same? Learners need to determine that the measuring tool matters.

Which tool is best?: Ask learners to choose objects to measure the choose the best tool to use to measure the object. Ask if small plates would be a good tool to use to measure a table? Why or why not? If they use different tools to measure the same objects, ask why the numbers are different and which tool is more accurate. Learners who measure accurately with informal tools can move up to the use of rulers or measuring tapes.

Compare perimeter and area: Use 12 same-sized square paper plates. Arrange them to make different sizes of rectangles or squares. Find the perimeter of each square or rectangle. What is the area of each square or rectangle? Do all of the squares or rectangles have the same perimeter? Try this again with a different number of square paper plates?